

The Upper Buffalo Creek Watershed Project

Marion County, West Virginia

Purposes and Sponsorship

The Upper Buffalo Creek Watershed Project was initiated to provide flood protection to homes, churches, businesses, farms, roads and bridges in and near Mannington, Marion County, West Virginia. The project was authorized for construction by Public Law 83-566, the Watershed Protection and Flood Prevention Act, in August 1966. Additional purposes of the project are to provide water supply for residents, industry, and recreation in the watershed.

The project is sponsored by the City of Mannington, the Monongahela Soil Conservation District, the Marion County Commission, the West Virginia Division of Natural Resources, and the West Virginia Soil Conservation Agency. The sponsors financed the landrights, as well as portions of the water supply and recreation components of the project. The federal government – the Natural Resources Conservation Service (formerly the Soil Conservation Service, or SCS), in the Department of Agriculture – financed the design and construction of the structures in the project. The local sponsors perform maintenance of the project, including mowing of the dam embankments and removing sediment from the channel.

Problems Leading to the Project



Figure 1 Flooding in May 1968: identified individuals are A. J. Manchin, foremost in boat; SCS Work Unit Conservationist Law Helmick, pointing; and Reverend Arthur C. Prichard, standing, in topcoat.

The community of Mannington has always experienced destructive floods (Figures 1 and 2). The "Application for Planning Assistance," dated September 14, 1954, cites "12 major floods during the past 32 years," and notes that "since the year 1888, there is a record of at least six deaths caused either directly or indirectly by major floods." It reports that "half of all of the business places and approximately 20 per cent of the residences of the City lie in the Valley bottomland along the creek banks and are subject to floods." Effects on the community, in addition to the flooding of homes and businesses, are described in the 1954 Application as follows:

"Loss of time for labor, production and transportation in the area; people unable to get to work with traffic in the area absolutely shut down; closing of schools and other difficulties mean that all normal activities are arrested. Breaking of gas and oil lines; heavy damage to fences and bridges; the very large losses to utilities, including power and phone poles and lines; holding up of trucks, buses and mail routes with doctors unable to get to patients seriously in need of medical care, are other difficulties."

Reverend Arthur C. Prichard, who served many years as president of the Buffalo Valley Association, used to tell of the flood that destroyed many pianos and property in his father's music store, which forced the closing of the business. A City of Mannington document refers to floods of 1888, 1911, 1912, 1914, 1922, 1945, 1947, and 1951. Law Helmick, the Soil Conservation Service Work Unit Conservationist at Fairmont, reported the "worst flood in Mannington and surrounding communities since 1955" on June 11, 1963, with 2.75 inches of rainfall. The water level at the gauge in town was 18 feet, or five feet above flood stage.



Figure 2 Flooding at the Presbyterian Church in Mannington, in May 1968. Note water level at the stop sign, upper center of photo.

The following chart shows some flood events which have occurred since 1963:

<u>Date</u>	<u>Rainfall Inches</u>	<u>Flood Level</u>
3/8/63	2.3	17'1"
6/14/63	2.75	14'
3/14/67	2.47	?
1/25/78	2.05	17'
7/3/78	2.88	15'
8/18/80	2.5	18'3"
6/6/81	?	16'
3/6/89	2.9	14'
12/18/90	2.61	14'

Floodwater damage to the City of Mannington and adjacent areas, sediment and erosion damage from improper land use, inadequate water supplies, and inadequate water-based recreation, were critical problems which prompted the project.

History of the Watershed Project

The Upper Buffalo Watershed Association was formed in about 1953 to address watershed problems of flooding, sediment damage, and lack of water supply. Some of the organizing members were Frances B. Bowers, Thomas A. Hite, Lloyd E. Moore, and Robert W. Kent. The Soil Conservation Service received an official "Application for Planning Assistance" from the Watershed Association on September 15, 1954. The following local citizens signed the document:

Howard R. Furbee, Mayor, City of Mannington

C. M. Charlton, President, Upper Buffalo Watershed Association

H. G. Moore, President, Mannington District Fair Association

Robert W. Kent, President, Mannington Lions Club

James L. Longstreth, President, Mannington Kiwanis Club

Also signing and recommending approval of the project for the Monongahela Soil Conservation District was Clarence W. Jackson. A petition listing 346 residents of the Mannington area accompanied the application.

Planning was authorized on January 25, 1955, under the Watershed Protection and Flood Prevention Act, PL 83-566. Planning of the project involved field reconnaissance of the watershed and economic and engineering investigations to determine the most cost-effective methods of solving watershed problems.

The Watershed Association elected the following officers in January 1961: Robert Kent, President; Reverend Arthur C. Prichard (Figure 3), Vice President; Miles Cunningham, Secretary; and Eugene Cunningham, Treasurer. Other directors were James Thorne, Hoover Michael, Charles Sheppard, Lloyd Moore, Mary Morgan, Junior Wilson, and Arkey Gooch. Renewed interest in the project led to the development, over several years, of a Watershed Work Plan. Local leaders obtained permission from landowners for making surveys and geologic investigations, secured easements and rights-of-way for land affected by the project, and coordinated with local utility companies and coal companies.



Figure 3 Reverend Arthur C. Prichard at the Site 22 monument.

Reverend Prichard and other directors of the Association worked to obtain commitments from local sponsors for the funds needed for the non-federal share of project costs, and worked with SCS on completing the local sponsor requirements of the Work Plan. In 1963, Reverend Prichard wrote to the Soil Conservation Service with a "personal guarantee" of cash and pledges of \$50,000 for the project. In August 1964, the Association printed 7000 pamphlets entitled ***Loss and Danger, or Opportunity -- The Upper Buffalo Creek***

Watershed, and distributed them to watershed residents and others as part of a fund-raising campaign for additional capital.

Alfred F. Millender, SCS Work Plan Party Leader at the Morgantown State Office, and Thomas B. Evans, SCS State Conservationist, were also instrumental in development of the Work Plan. A field review meeting was held at Mannington on December 16, 1965 to review and approve the plan for submission to Washington, D.C. Representatives of the WV Department of Natural Resources, WV State Road Commission, Marion County Court, Marion County Extension Service, Monongahela Soil Conservation District, WV State Soil Conservation Committee, USDA Farmers Home Administration, USDA Agricultural Stabilization and Conservation Service, USDA Forest Service, USDA Soil Conservation Service, City of Mannington, Upper Buffalo Watershed Association, U.S. Army Corps of Engineers, and the Monongahela Power Company participated. On March 9, 1966, Reverend Prichard and County Commissioner John M. Onderko, accompanied by Thomas Evans, met with Senators Robert C. Byrd and Jennings Randolph in Washington regarding financing of the project.

The Work Plan was approved for operations by Congress on August 19, 1966, and was executed by the sponsors and the Soil Conservation Service on August 22, 1966. Congressional approval granted federal assistance for the final design and construction of the structural measures and for installation of the conservation practices. Seven upstream dams were constructed in the watershed from July 1968 through April 1993

(Figures 4 and 5). A supplemental Watershed Plan and Environmental Impact Statement was completed on April 4, 1994. The channel improvement was completed in October 1997.



Figure 4 *Raising the fill of the embankment at Site 16, in 1981. The different zones of fill are evident by the differing colors of material.*



Figure 5 *Installing the principal spillway pipe at Site 33A in 1991.*

Project Dedication

A formal dedication of the project was held on June 29, 1998, at Mannington. Buffalo Valley Association director and former Mannington mayor Gene Powell thanked the many people who were involved, including Robert W. Kent, who actively served the project from the 1950's. Gene thanked other past and present directors of the Association; work unit conservationists and district conservationists from the Natural Resources Conservation Service; city, county, and state officials who worked on the project; state and federal legislators, project sponsors, and Senator Robert C. Byrd (Figure 6), who obtained Congressional funding for the project. In addition, remarks were made by William J. Hartman, State Conservationist of the Natural Resources Conservation Service, and Senator Robert C. Byrd.



Figure 6 Senator Robert C. Byrd speaking at the June 29, 1998 dedication.

Excerpts from Remarks

Project Measures

Project Map

Land Treatment

Land treatment measures have been applied on 8,365 acres to decrease erosion rates and reduce sediment deposition in waterways and flood prevention dams. Practices applied include pasture and hayland management, critical area planting, and forestland improvement.

Dams

The seven dams (see locations on project map) control nearly 8,000 acres of the Upper Buffalo Creek drainage area upstream of Mannington. Photos and data on each dam follow:

- Site 2 on Huey Run** (Flood Prevention and Water Supply)
- Site 4 on Owen Davy Fork** (Flood Prevention and Recreation)
- Site 16 on Hibbs Run** (Flood Prevention and Water Supply)
- Site 22 on Big Run** (Flood Prevention)
- Site 33A on Flat Run** (Flood Prevention)
- Site 37A on Whetstone Run** (Flood Prevention)
- Site 39 on Llewellyn Run** (Flood Prevention)

How a Watershed Dam Works

Channel Improvement

The Buffalo Creek Channel Improvement (Figure 7) was installed beginning at the Clarksburg Street Bridge in downtown Mannington and extending downstream 6,750 feet to just below the Flaggy Meadow Bridge. Alvarez Contractors, Inc. began construction of this final component of the project in July 1995, and completed the work in October 1997.



Figure 7 Portions of the 50-foot wide channel are lined with a 1 foot thick layer of 3" to 12" size rock riprap. Side slopes are 2 horizontal to 1 vertical.

Benefits

Conservation land treatment measures have increased vegetative cover, improved hydrologic conditions, increased infiltration of water into the soil, enhanced groundwater recharge, and prevented excessive losses of topsoil on nearly 8,365 acres of watershed land. They have increased timber, forage, hay, and crop production; enhanced aesthetic values; improved water quality and fishery resources; and increased wildlife habitat throughout the watershed (Figure 8).

Figure 8
The impoundment at Site 4 includes a waterfowl-nesting island for increased fish and wildlife habitat.



The seven watershed dams and channel improvement (Figure 9) provide flood protection for Mannington and other downstream communities. The completed project reduces the 100-year storm frequency flood stage about 4 feet in Mannington. An estimated 57% of annual floodwater damages to homes, businesses, roads, bridges, fences, utilities and other improvements have been eliminated. Annual flood damages have been reduced by \$663,500 (1998 price base). Properties protected include 537 homes and businesses. First floor flooding has been eliminated at 71 homes and 130 businesses.

Annually, water supply benefits are \$315,400 and recreation benefits total \$184,900. On a yearly basis, 37,395 recreation user days have been added to the watershed, and employment benefits total \$130,100. Total annual benefits for the project total \$1,406,200, and total annual costs are \$1,011,200. (All figures are 1998 price base.) The benefit to cost ratio for the project is 1.4 to 1.0, meaning that for

every dollar spent, \$1.40 is returned to the community in savings from reduced flooding, improved water supply, and in recreation benefits from the project.



Figure 9 *The channel improvement carries the stream in-bank after several inches of rain in June 1998.*

The reduced threat of flooding has brought about an increased value of residential and commercial properties in the floodplain. Controlling floodwaters reduces conditions detrimental to the health and welfare of watershed residents, including mosquito breeding sites and potential for waterborne illnesses. Water-based recreation opportunities have been substantially increased through fishing and boating on watershed lakes. Implementation of the project has improved the overall quality of living in the watershed and increased the sense of community pride in watershed residents.

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